Care of Patients with Pituitary

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Disorders of the Anterior Pituitary Gland

- Target tissue
  - Thyroid, adrenal cortex, ovary, testes, uterus, mammary glands and kidney
- Either excess or deficiency
- Pathologic condition within the gland or hypothalmic dysfunction
- Two to focus on:
  - Hyperpituitarism
  - Hypopituitarism

Hypopituitarism

- Deficiency of one or more anterior pituitary hormones results in metabolic problems and sexual dysfunction.
- Panhypopituitarism—decreased production of all of the anterior pituitary hormones.
- Most life-threatening deficiencies—ACTH and TSH.
- Deficiency of gonadotropins.
- Growth hormone
  - Proportionate dwarfism

Causes of Hypopituitarism

- Benign or malignant tumors
- Anorexia nervosa (eating disorder)
- Shock or severe hypotension
- Head trauma
- Brain infection
- Congenital

Patient–Collaborative Care

- Interventions include:
  - Replacement of deficient hormones
  - Androgen therapy for virilizationمعالم الرجولة; gynecomastia معالم انثويةcan occur
  - Estrogens and progesterone
  - Growth hormone
  - Thyroxin

Hyperpituitarism

- Hormone over secretion occurs with pituitary tumors or hyperplasia
- Genetic considerations

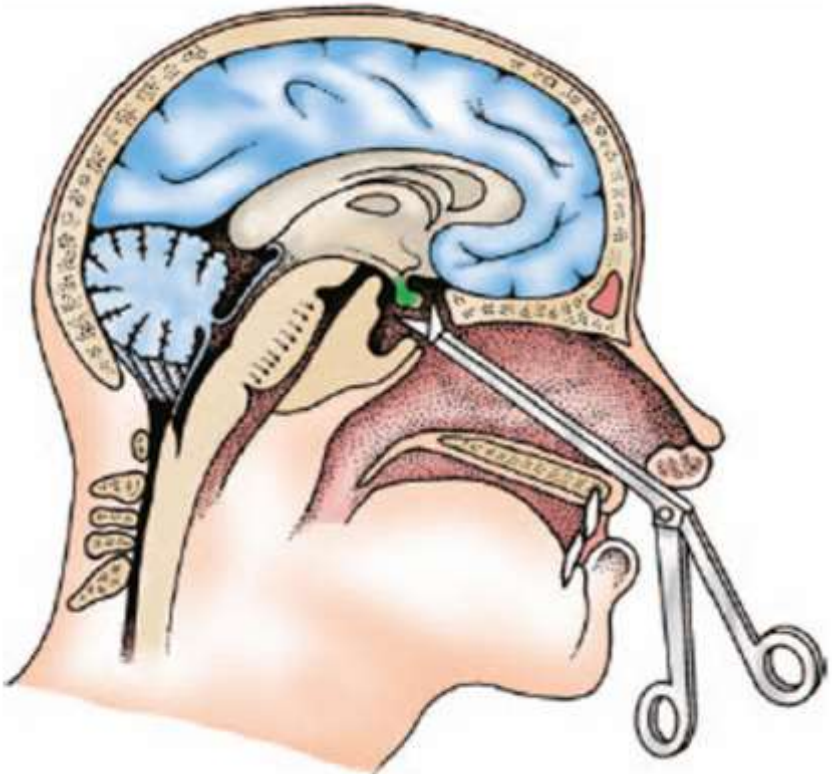
Giantism & Acromegaly

- Giantism is the onset of growth hormone hypersecretion before puberty.

- Acromegaly: Growth hormone hypersecretion after puberty

Surgical Intervention

Transsphenoidal or transfrontal removal of the pituitary gland



Postoperative Care

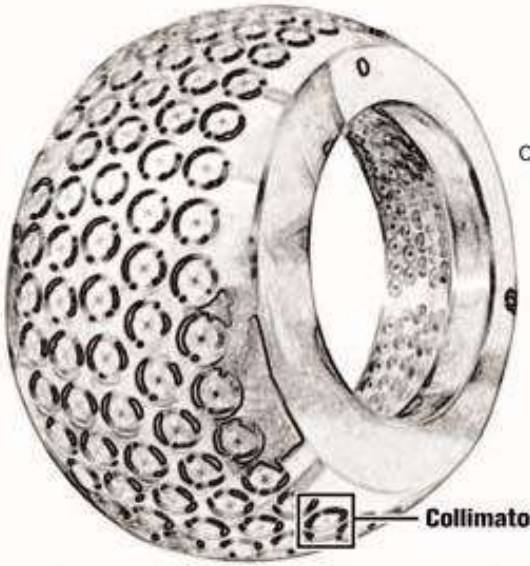
- Monitor neurologic response
- Assess for postnasal drip
- HOB elevated
- Avoid coughing early after surgery
- Assess for meningitis
- Hormone replacement
- Avoid bending
- Avoid strain at stool
- Avoid tooth brushing
- Numbness in the area of the incision
- Decreased sense of smell
- Vasopressin

Patient– Collaborative Care

- Assessment
- Nonsurgical management:
  - Drug therapy- to reduce GH secretion or the effects on tissues
    - Somatostatin analogues
    - Dopamine agonists
    - Growth hormone antagonist
  - Radiation
  - Gamma knife procedure
    - Usually one time treatment

Gamma knife treatment

The so-called gamma knife procedure is used to destroy small tumors in the brain while sparing as much healthy tissue as possible. Beams of low-intensity radiation are focused so that the beams intersect on the target. Brain scans are used to precisely locate the target and guide the equipment. Each individual beam passes harmlessly through the skull and brain. Only where the beams intersect is the energy level high enough to damage a cell's DNA. The procedure doesn't work for large tumors, however, because of the risk of damage to nearby healthy cells.



The gamma knife
Helmetlike device holds 201 metal cylinders called collimators that focus individual beams of ionized cobalt 60 radiation.

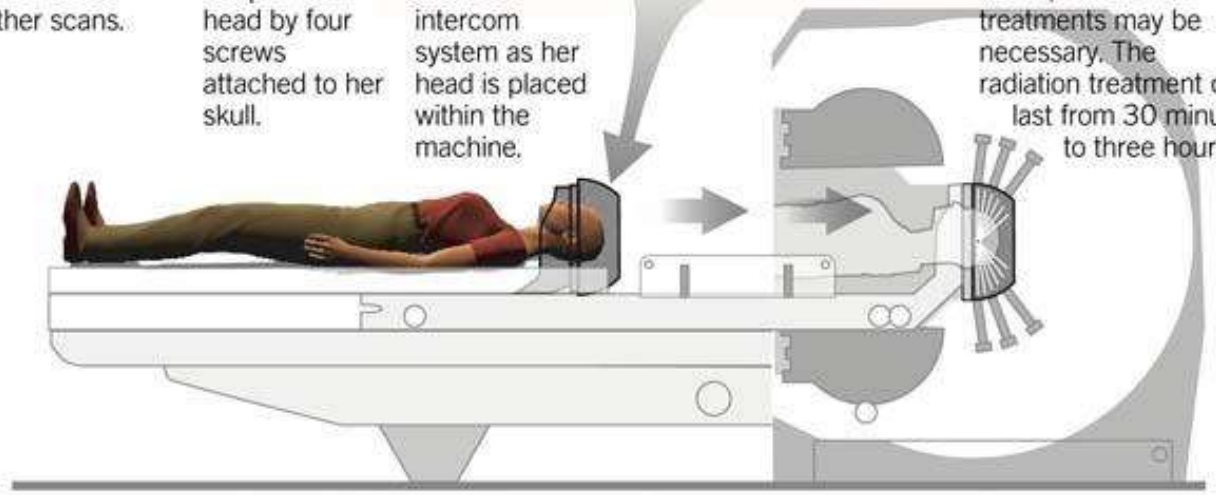
The procedure

❶ Doctors locate the tumor with MRI or other scans.

❷ The helmet is attached to the patient's head by four screws attached to her skull.

❸ The patient is monitored by a video-intercom system as her head is placed within the machine.

❹ Depending on the complexity of the tumor, one to four treatments may be necessary. The radiation treatment can last from 30 minutes to three hours.



Adrenal Gland Dysfunction

Adrenal Gland Hypofunction

- Adrenocortical steroids may decrease as a result of inadequate secretion of ACTH
- Dysfunction of the hypothalamic-pituitary control mechanism
- Direct dysfunction of adrenal tissue

Effect of Insufficiency of Adrenocortical Steroids

- Adrenal hypofunction/ Adrenal insufficiency
- Loss of aldosterone and cortical action
- Decreased gluconeogenesis
- Depletion of liver and muscle glycogen
- Hypoglycemia
- Reduced urea nitrogen excretion
- Anorexia and weight loss
- K, Na, and water imbalances

Addison's Disease

- Primary: ACTH may be high
- Secondary: ACTH will be low
  - Sudden cessation of long-term high-dose glucocorticoid therapy
  - ↓ corticol

Etiology

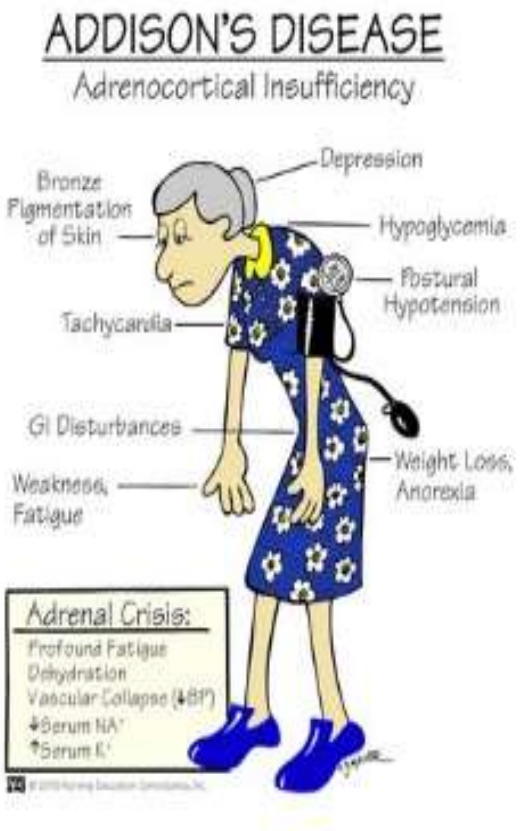
- Primary
  - Bilateral Adrenalectomy
- Secondary
  - ↓ ACTH from pituitary
  - ↓ hypothalamus stimulation
- Prolonged use of corticosteroid Rx →
- ↓ ACTH → ↓ hormonal release from adrenal gland

Addison's Disease: Signs & Symptoms

- Hypotension
  - Lack of aldosterone →Na+ & H2O loss
  - K+ reabsorption
- Tachycardia
- Orthostatic hypotension
- Bronze coloration of skin
- Hypoglycemia
- Vitiligo
- Fatigue, muscle weakness
- Weight loss

Addison's Disease: Signs & Symptoms

- ↓ tolerance for stress
  - Anxious
  - Irritable
  - Confused
- Pulse: Weak
- GI upset: N/V +Anorexia



Addison's disease: Medical Management

- Restore fluid and electrolyte balance
- Replacement of deficient adrenal hormones
  - Glucocorticoids (hydrocortisone)
  - Mineralocorticoids (fludrocortisone)
- Lifetime steroids
- Diet: High in Na+ & Low in K+

Addison's disease: Nursing Management

- NG Dx:
- Fluid volume deficit RT Vomiting or ↑ renal losses
  - A.M.B.
    - Poor skin turgor
    - Weight loss
    - Orthostatic hypotension

Addison's disease: Nursing Management

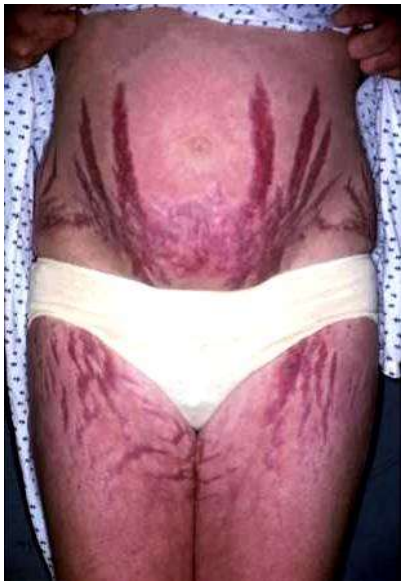
- Q Day weight
- I&O
- Glucose monitoring
- K+ & Na+
- Skin turgor
- Orthostatic hypotension

Adrenal Gland Hyperfunction

- Hypersecretion by the adrenal cortex results in Cushing's syndrome/disease, hypercortisolism, or excessive androgen production

Hypercortisolism (Cushing's Disease)

- Assessment:
  - Clinical manifestations—skin changes, cardiac changes, musculoskeletal changes, glucose metabolism, immune changes
  - Psychosocial assessment
  - Laboratory tests—blood, salivary and urine cortisol levels



Cushing disease/ syndrome

- Signs & Symptoms
  - Deposits of adipose tissue in the face, neck & trunk
  - Moon shaped face
  - Buffalo hump
  - Weight gain
  - Na & H_20 retention
  - Hypokalemia
  - Purple striae on the abdomen
  - Hirsutism التشعر& amenorrhea, ↓ libido, irritability, emotional labiality
  - ↓ wound healing

Diagnosis

- Plasma Corticol level
- ACTH level
- Adrenalangiography

Hypercortisolism: Nonsurgical Management

- Patient safety
- Drug therapy
- Diet: High in protein High K+ Low Na
  Reduces carbs & calories
- Surgical Management
- If pituitary gland → Hypophysectomy
- If adrenal tumor → Adrenalectomy

Nursing Management

- VS
- Lung auscultation /Crackles
- Edema
- Skin integrity
- Glucose levels
- S&S of infection

	Hypofunction	Hyperfunction
Disorder	Addison's disease	Cushing syndrome
S&S	Na+ & H20 loss weight Hypotension Hypoglycemia Fatigue Hyperkalemia	Na+ & H20 retention Wt. gain Hyperglycemia Buffalo hump Moon face Hypokalemia

	Hypofunction	Hyperfunction
Usual tx	Glucocorticoids Mineralocorticoid Restore fluid	Rx: Surgery
Ng Dx	Fluid volume deficit	Fluid volume excess Glucose intolerance
Diet	↑ Na+ ↓ K+	↓ Na+ ↑ K+

Hyperaldosteronism

- Increased secretion of aldosterone results in mineralocorticoid excess.
- Primary hyperaldosteronism (Conn's syndrome) is a result of excessive secretion of aldosterone from one or both adrenal glands.

Patient-Centered Collaborative Care

- Assessment
- Most common issues— hypokalemia, hypernatremia, and hypertension
- Interventions
- Adrenalectomy
- Drug therapy
- Glucocorticoid replacement

Pheochromocytoma

- Hyperstimulation of the adrenal medulla caused by a tumor
- Excessive secretion of catecholamines(release epinephrine and norepinephrine)
- C/M: HTN: > 115 mmHG diastolic BP
- Tachycardia/Palpitations
- Profuse diaphoresis
- Visual disturbances
- N/V
- Feeling of apprehension
- Elevated blood glucose levels

Pheochromocytoma: Medical Management / Surgical

- Treatment of choice is Surgery
- Adrenal gland removed
- Antihypertensive drugs
- Diet: ↑ protein– Avoid caffeine
  - After surgery, assess blood pressure